



15N65

Power MOSFET

15A, 650V N-CHANNEL POWER MOSFET

DESCRIPTION

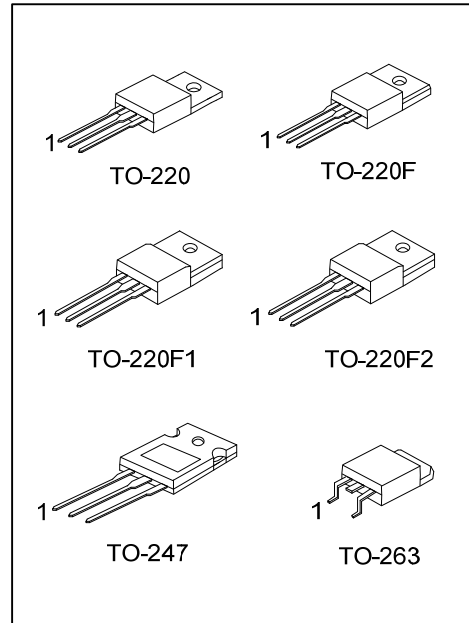
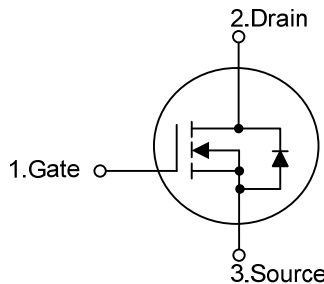
The UTC **15N65** is an N-channel mode power MOSFET using UTC's advanced technology to provide costumers with planar stripe and DMOS technology. This technology is specialized in allowing a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode.

The UTC **15N65** is universally applied in active power factor correction and high efficient switched mode power supplies.

FEATURES

- * $R_{DS(ON)} \leq 0.65\Omega @ V_{GS}=10V, I_D=7.5A$
- * High switching speed
- * Improved dv/dt capability

SYMBOL



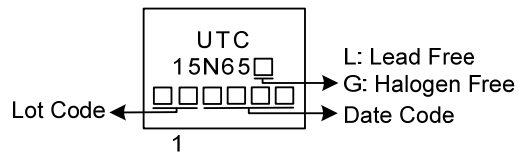
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
15N65L-TA3-T	15N65G-TA3-T	TO-220	G	D	S	Tube
15N65L-TF1-T	15N65G-TF1-T	TO-220F1	G	D	S	Tube
15N65L-TF2-T	15N65G-TF2-T	TO-220F2	G	D	S	Tube
15N65L-TF3-T	15N65G-TF3-T	TO-220F	G	D	S	Tube
15N65L-TQ2-T	15N65G-TQ2-T	TO-263	G	D	S	Tube
15N65L-TQ2-R	15N65G-TQ2-R	TO-263	G	D	S	Tape Reel
15N65L-T47-T	15N65G-T47-T	TO-247	G	D	S	Tube

Note: Pin Assignment: G: Gate D: Drain S: Source

<p>15N65G-TA3-T</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) T47: TO-247, TA3: TO-220, TF1: TO-220F1 TF2: TO-220F2, TF3: TO-220F, TQ2: TO-263 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_c=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain to Source Voltage		V _{DSS}	650	V
Gate to Source Voltage		V _{GSS}	±30	V
Continuous Drain Current	Continuous	I _D	15	A
	Pulsed (Note 2)	I _{DM}	60	A
Avalanche Current (Note 2)		I _{AR}	6.4	A
Avalanche Energy	Single Pulsed (Note 3)	E _{AS}	205	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	2.45	V/ns
Power Dissipation	TO-220/TO-263	P _D	250	W
	TO-220F		54	W
	TO-220F1/TO-220F2		52	W
	TO-247		312	W
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Repetitive Rating : Pulse width limited by maximum junction temperature.

3. L=10mH, I_{AS}=6.4A, V_{DD}= 50V, R_G=25Ω, Starting T_J=25°C

4. I_{SD} ≤ 15A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J=25°C.

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT	
Junction to Ambient	TO-220/TO-220F TO-220F1/TO-220F2 TO-263	θ _{JA}	62.5	°C/W	
	TO-247		40	°C/W	
	Junction to Case		θ _{JC}	0.5	°C/W
				TO-220/TO-263	2.3
TO-220F		2.4		°C/W	
TO-220F1/TO-220F2		0.4		°C/W	
TO-247					

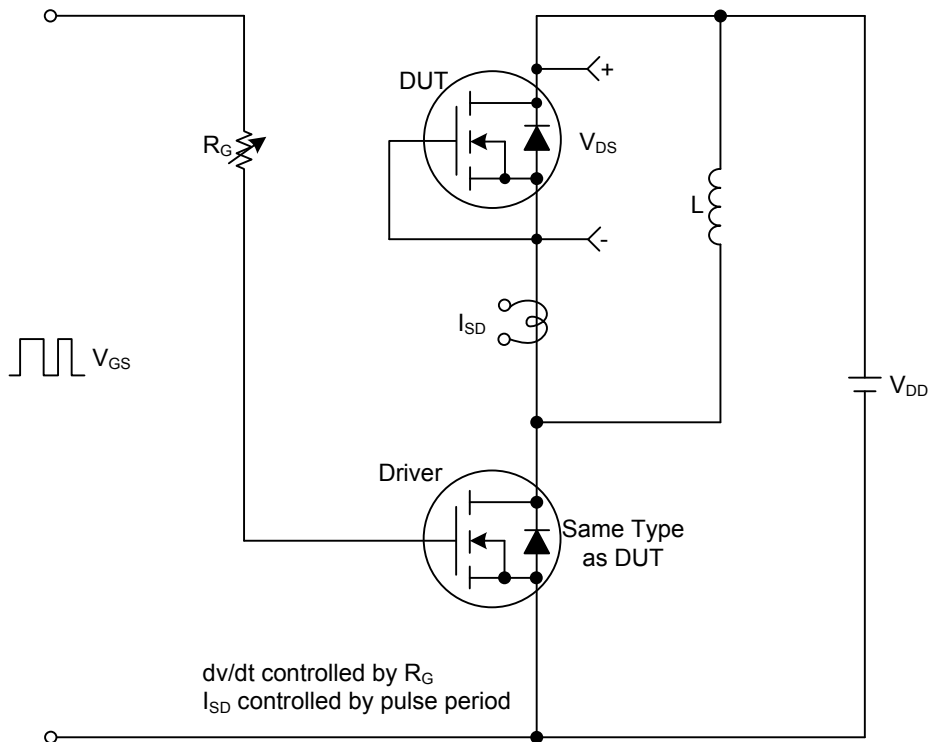
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	650			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V			1	μA
Gate- Source Leakage Current	Forward	V _{GS} =+30V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-30V, V _{DS} =0V			-100
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =7.5A			0.65	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		2700		pF
Output Capacitance	C _{OSS}			240		pF
Reverse Transfer Capacitance	C _{RSS}			26		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q _G	V _{DS} =300V, V _{GS} =10V, I _D =10A, I _G = 1mA (Note 1, 2)		60		nC
Gate-Source Charge	Q _{GS}			16		nC
Gate-Drain Charge	Q _{GD}			18		nC
Turn-ON Delay Time (Note 1)	t _{D(ON)}	V _{DD} =300V, V _{GS} =10V, I _D =10A, R _G =25Ω (Note 1, 2)		30		ns
Turn-ON Rise Time	t _R			28		ns
Turn-OFF Delay Time	t _{D(OFF)}			194		ns
Turn-OFF Fall Time	t _F			43		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				15	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				60	A
Drain-Source Diode Forward Voltage (Note 1)	V _{SD}	I _S =15A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time (Note 1)	t _{rr}	I _S =15A, V _{GS} =0V, dI _F /dt=100A/μs		510		ns
Body Diode Reverse Recovery Charge	Q _{rr}				8.2	

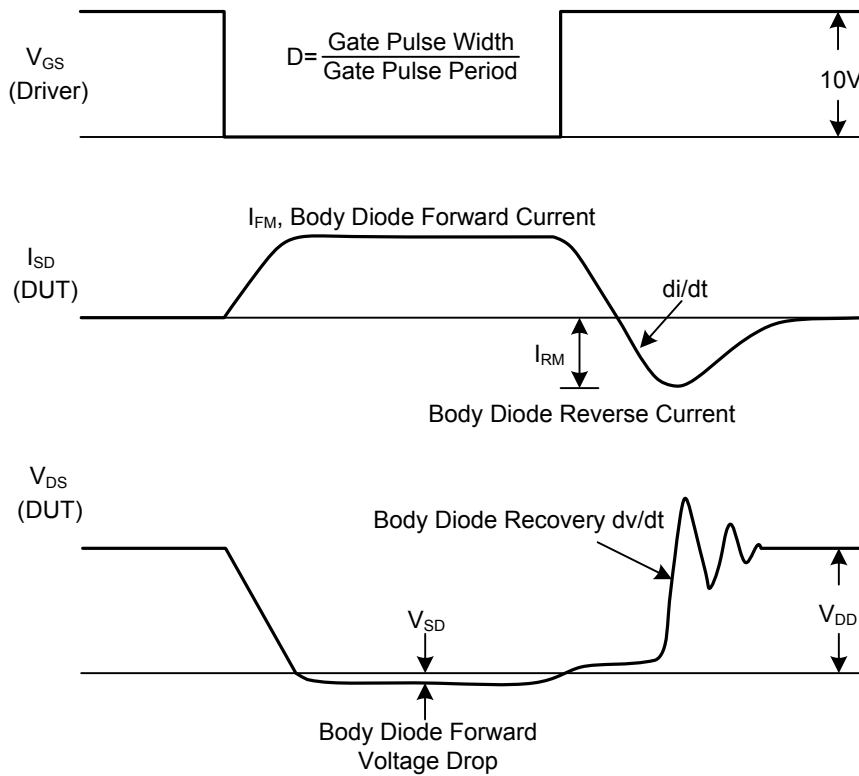
Notes: 1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

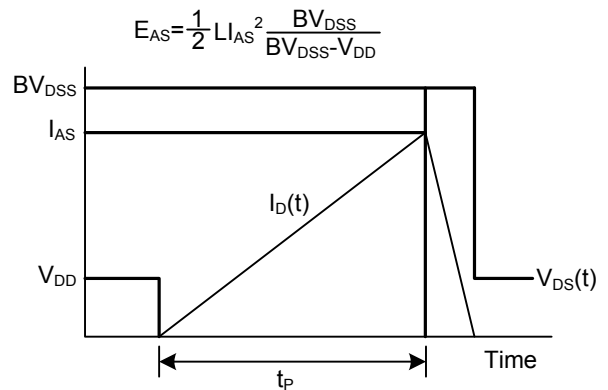
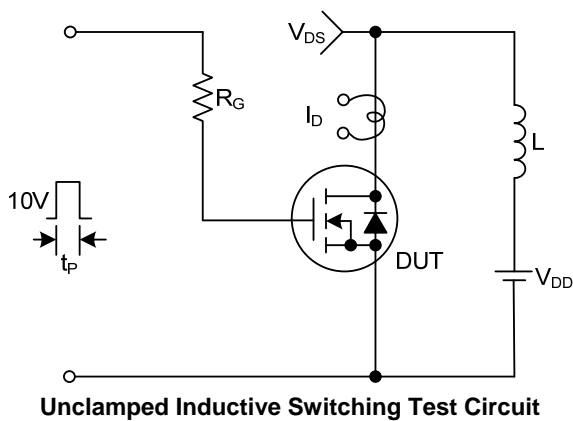
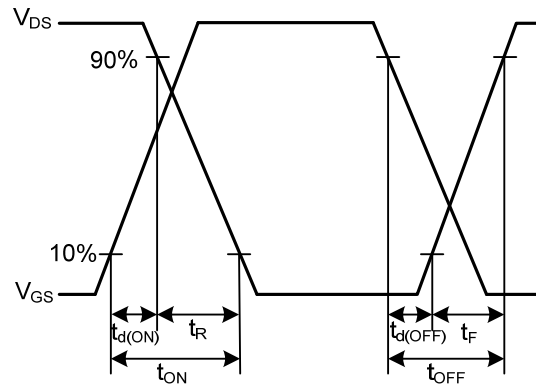
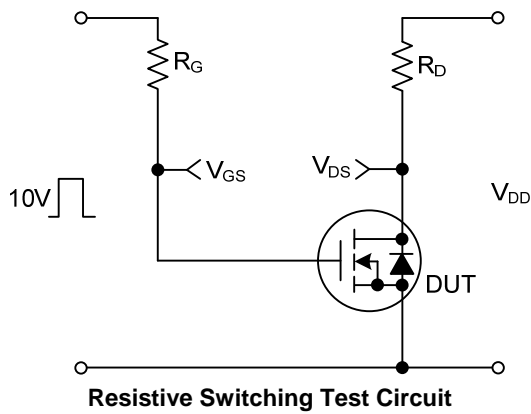
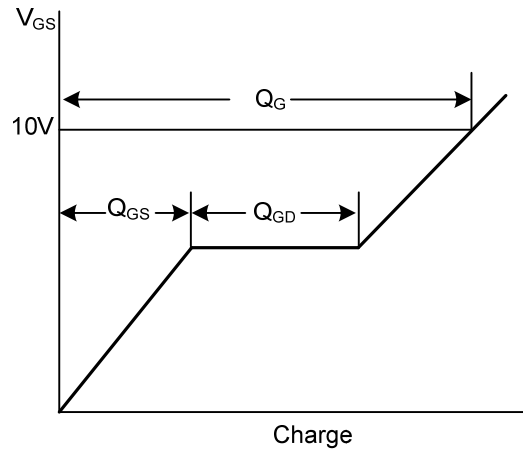
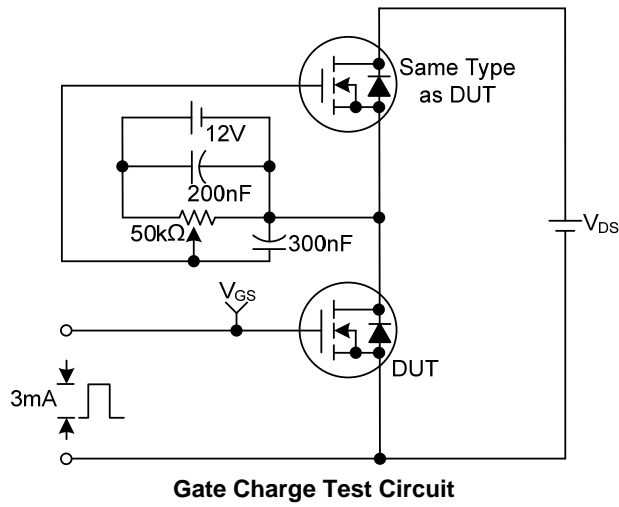
■ TEST CIRCUITS AND WAVEFORMS



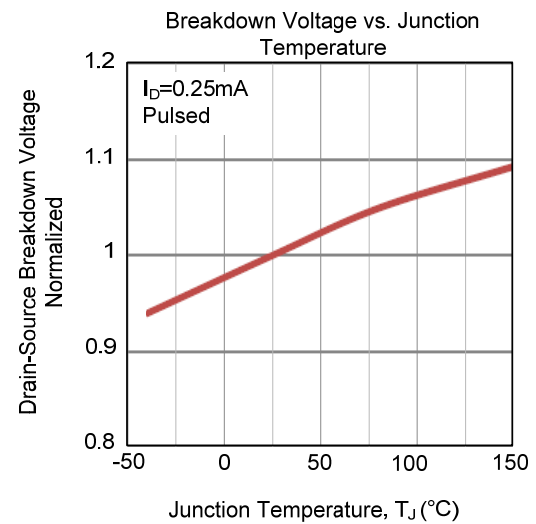
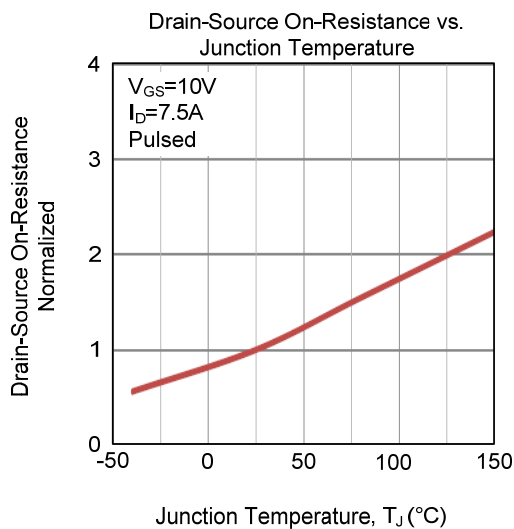
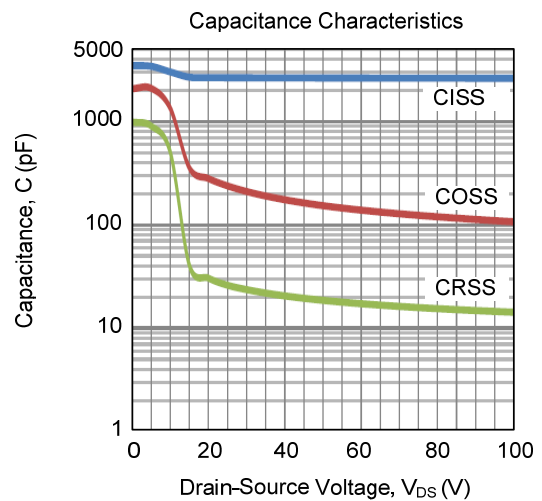
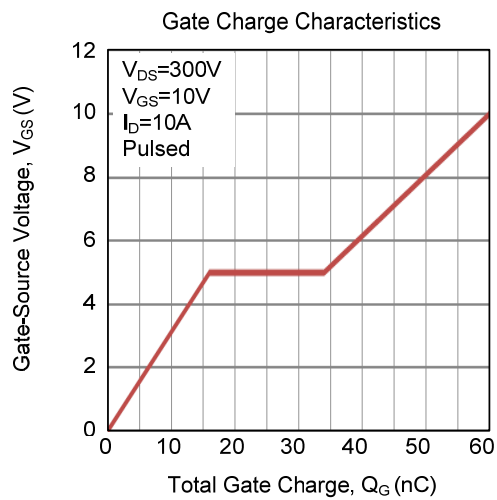
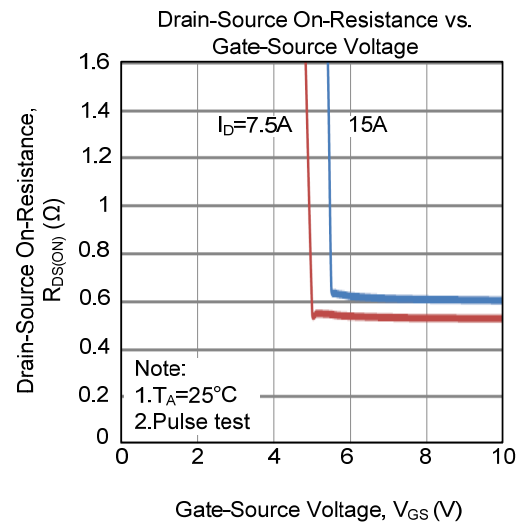
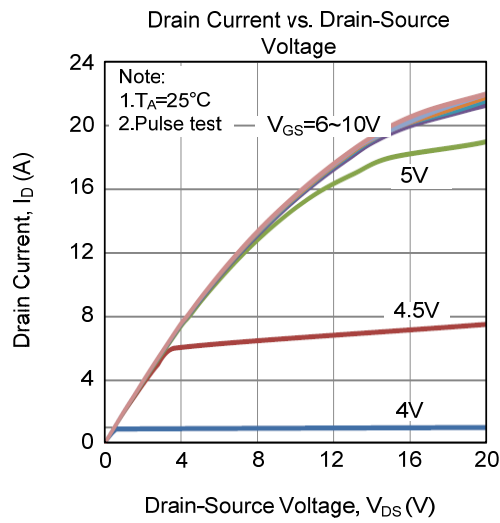
Peak Diode Recovery dv/dt Test Circuit & Waveforms



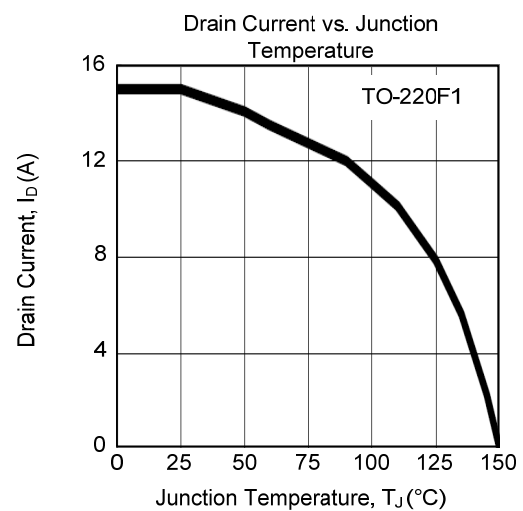
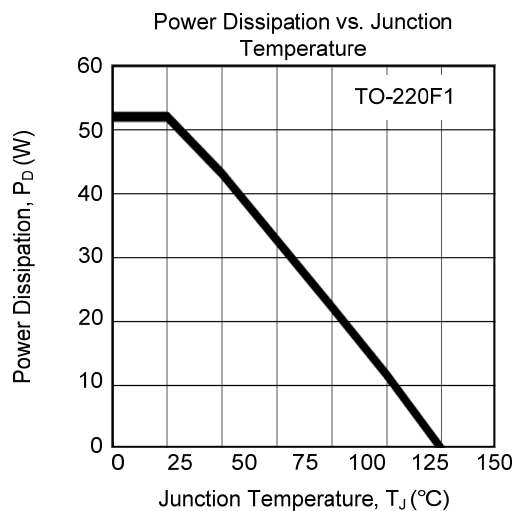
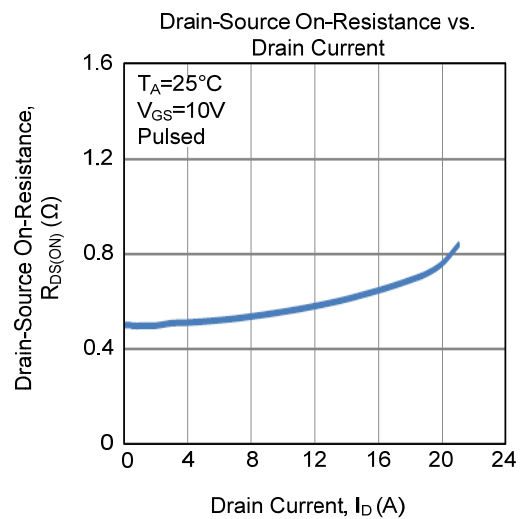
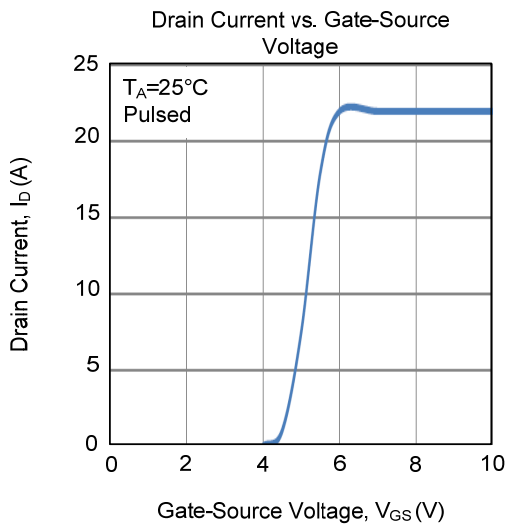
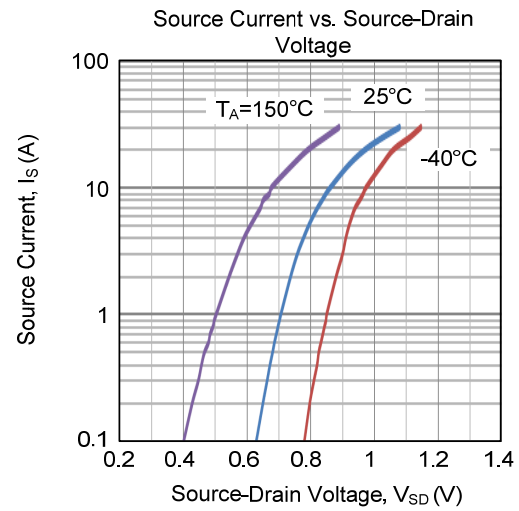
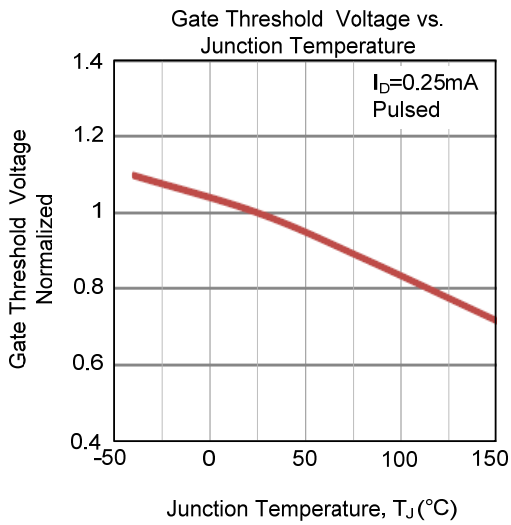
TEST CIRCUITS AND WAVEFORMS



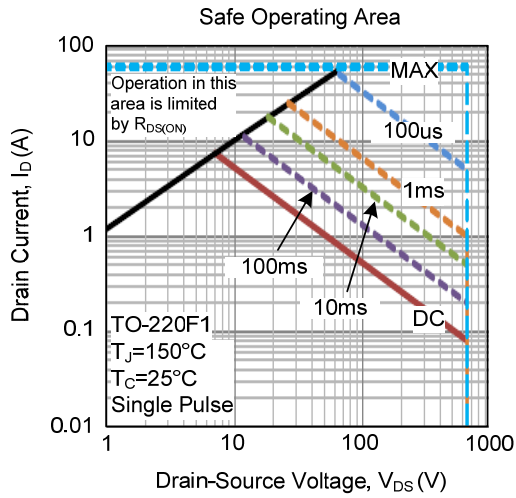
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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